although the section sat until nearly six o'clock they could not all be read.

The first by the late Sir Antonio Brady on "Prevention of Smoke in Fire Places" was read by Gen. Alexander, one of the secretaries of this section.

Mr. H. H. Collins followed on "Home Sanitation and House Inspection," the practical common sense of which was that every man and woman should be their own sanitary inspector.

Mr. Burton, for Prof. Fleeming Jenkin, argued the importance of associations with an annual subscription, for sanitary inspection.

Dr. Strong, of Croydon, supplied various hints on domestic sanitation, supporting earnestly a constant instead of an intermittent water supply. Mr. Bailey Denton treated on the subject of the domestic filtration of water, giving a description of the common filters in use, with special reference to those in the exhibition. Mrs. King created a great interest by an essay on "Health in Relation to Clothing," in which she proposed a radical change for the better in the clothing of women. Mr. Alderman Hallett, Mayor of Brighton, described an every-day process for the domestic softening of water from the chalk, and illustrated his paper by one or two simple and very neat experiments.

Mr. Henry C. Stephens took up the subject of public elementary education in relation to public health, presenting an exceedingly thoughtful and practical communication, in which it was urged that in the beginning of life the senses should be more carefully trained by easy exercise of observation, analysis of impression, and muscular training in connection with mental effort.

The proceedings of the section were brought to a close by an address singularly felicitous in style and matter, by Major Robert Edis, F.S.A., on "Sanitation in Decoration."

General Meeting

At the conclusion of the sectional sitting which, like all the others, had been held in the Dome, the President took the chair for the general meeting, at which the usual formal votes of thanks were moved, seconded, and carried, together with the following resolution of condolence and sympathy: "That this meeting has heard with the deepest regret of the death of their much esteemed and distinguished colleague, the late Sir Antonio Brady, and hereby requests the President of the Congress to convey to Lady Brady and her family the sincere condolence of the members in an event which to them and the public is so great a bereavement." After the general meeting a large number of the Associates attended the "Health Congress Dinner" in the Banqueting Room of the Royal Pavilion.

Lecture to the Working Classes, by Brudenell Carter, F.R.C.S.

The proceedings of the Congress were brought to a fitting close on Saturday evening, Dec. 17, by the lecture delivered to the working classes, as well as to the Associates, by Mr. Brudenell Carter. The lecturer took for his topic "Eyesight," and for an hour and ten minutes held the large audience in closest attention. He first treated on the evolution of the eye as an optical instrument; next he described the structures of which the instrument is composed; thirdly, he discussed the irregularities of structure, dealing specially with the two irregularities, short sight and colour-blindness; lastly, he treated on the practical application of the knowledge of visual defects in its relation to educational training. The bad practice of teaching children to read and write with their eyes close to the paper, by which the defect of short-sightedness is so extensively produced, was strongly condemned, as well as the faults connected with bad light, bad paper, and irregular and imperfect printing.

The Exhibition

We should be remiss if we did not add a few lines on the Exhibition. The managers of this department struck out quite a new line in making it something more than sanitary. They called it a domestic, sanitary, and scientific exhibition, and this enabled them to introduce various things that add to the useful and the ornamental, as well as the healthful. All kinds of electrical apparatus that could serve in the house were shown. Various kinds of mechanical contrivances, and numerous objects for illustrating artistic improvements, such as painting of walls in corridors, halls, staircases, and rooms. Horological instruments found a place, and a great number of instruments for recording time were under constant inspection. In addition, the bicyclists and tricyclists had their department, and were presented with a goodly show of these new machines for pleasurable and useful exercise. In a word, all was so excellently classified, selected, and arranged that on the whole we never remember to have seen so good an exhibition. In the six visits we made to it we cannot express correctly which pleased us most, the place itself and its exhibits, or the extraordinary interest with which all the visitors, rich and poor alike, took in it. Everybody seemed to show an intelligent desire to collect all practical information that could be obtained; and when from this task they passed to the fine art Loan Collection which the authorities at South Kensington had the kindness and excellent taste to supply, the transition from the useful to the beautiful was indeed a pleasurable sight.

The peculiar feature of the Brighton Health Congress was its character as an example. In numbers and importance of papers read and discussed it rivalled some of the organised congresses, which having the metropolis as their centre, proceed to different towns and make them for a short season their platform. There can be no doubt that there is some danger to what are called the peripatetic societies in this initiation. If the town of Brighton can call together twelve hundred members to a congress, secure papers for various important sections, command the services of efficient officers, issue a volume of Transactions, and get together a scientific exhibition that shall attract several thousands of visitors, what may not larger towns accomplish, such as Birmingham, Manchester, Leeds, Newcastle, Liverpool, Edinburgh, and Glasgow. These immense places cannot possibly be expected to remain uninfluenced by the example set by Brighton and the results of the example. If then each town takes to forming its own congresses, there will soon be little ground left for congresses on the visit. Towns will vie with towns in organising instead of receiving meetings organised for them to receive. For our part, however, we augur nothing but good from such a new departure and new development. The light of science and knowledge will only burn all the brighter in a place out of which it has been struck; and as every town must invite to its congresses the same workers as would go if they followed the peripatetics, the characters of the different meetings will be the same in effect and usefulness.

ANCIENT TIDAL ACTION AND PLANES OF MARINE DENUDATION

THERE is at least one question in ancient physical geology on which the speculations of Prof. R. S. Ball (NATURE, vol. xxv. pp. 79, 103) regarding the magnitude of Tidal Waves in times past seem to throw fresh light, namely, the origin of "planes of marine denudation." For those readers of NATURE who may not be familiar with this term, first proposed by Prof. Sir A. Ramsay, let me endeavour briefly to describe them. If we protract to a true scale the outlines of certain tracts of the British Isles, of Europe, or of America, we shall find

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that the higher portions of the ridges tend to rise to a certain level, which, on being connected by an imaginary plane, form a gently-sloping surface over a considerable area, it may be of hundreds or thousands of square miles in extent. Now, if in addition to this we insert the stratification of the district crossed by the section, and taken from actual observation, it will often be found that this imaginary plane is formed of the truncated edges of highly-inclined strata, or of the denuded summits of anticlinal arches of contorted or folded strata. When such strata are of hard and tough materials it is clear that they must have been planed down by an agent of great power and of long-continued action, but the result has been to convert originally highly uneven surfaces of flexured strata into approximately horizontal surfaces, over which inequalities have been worn off. Through such planes the existing river-valleys have been cut down, but between neighbouring valleys there is to be found the intervening ridge, trending upwards to the original, now imaginary plane. The Silurian district of Central Wales offers a remarkable example, which has been used by Prof. Ramsay ("Mem. Geol. Survey," vol. i.). Let any one on reaching the summit of one of the long ridges to the south of Cader Idris place his head on the ground, and in this position survey the tract of hilly country lying to the southwards, and he will realise the nature of the plane surface, out of which the valleys have been hollowed. But there are many more remarkable instances even than this. The central plain of Ireland is an example on a larger scale, over which the Middle and Upper Carboniferous rocks have been swept away, leaving a floor of limestone; but it would be impossible to explain the course of its great river, the Shannon, without referring its origin to a time when a sloping plain stretched from the present sources of that river amongst the Leitrim Hills to Shannon harbour below Limerick, because now its channel traverses a ridge of Old Silurian rocks at Killaloe, which could not have existed *as such* when the river first commenced to run over a tract formed of Carboniferous beds since denuded. But it is amongst mountainous districts that the evidence of the former existence of old planes is most remarkable, because least expected. The higher ridges of the Grampians seen at a distance, or accurately drawn from a hypothetical standpoint (as on Mr. Knipes' panoramic picture), forcibly bring home this idea to the mind. The ridges and peaks with very few exceptions tend to rise to an imaginary plane connecting the higher elevations, while several actual terraces coincide with the plane itself. Out of this old plane the existing valleys have been cut down, during the vast period of time descending from the pre-Devonian to the present. A still more ancient plane was that in which the Cambrian sandstones and conglomerates were strewn, formed of tough gneiss and hornblendic schists, with a gentle rise towards the east. The Scandinavian Promontory offers an illustration on a grand scale, and to these we might add the pre-Triassic plane formed of the denuded Devonian and Carboniferous rocks of Belgium and the Rhine highly tilted, convoluted, and contorted, through which the existing rivers have carved out their channels. But I refrain from adding additional illustrations, as I must pass to the consideration of the question, How have such ancient planes been formed? Where was the agent capable of abrading down hundreds or thousands of feet of the most obdurate rocks over hundreds or thousands of square miles, and of transporting power sufficient to carry away the *débris* of these vast ruins? The geologist answers, "Only give me an unlimited time, and the waves, tides, and currents of the seas acting along the coast-lines as they at present act, will effect all that you demand." Granted that with "unlimited" time all this may be effected, but this is a demand which the astronomers will not concede, and geologists must pay some respect to astronomers and mathematicians after all. But even with the aid of (practically) "unlimited" time a serious objection meets us at the threshold. It is undeniable that the crust of the earth is always on the move, either upwards or downwards; those who are not intensely uniformitarian in their views contend that this oscillatory motion of the crust was much more rapid in past geological times than at the present day. If this be admitted, and I hold that it is a necessary consequence of the constantly decreasing rapidity with which the secular cooling of the surface has progressed downwards to the present day, how, let me ask, are you to get the coast to remain sufficiently long within range of such wave action as we see at present, to admit of the abrasion of the land to any considerable distance. The effects of wave action along our existing coasts, where formed of the more solid strata, is admittedly very slow, and in order to produce any great planing effects, the same coast-level (approximately) must be presented to it for a lengthened period; but with the required (practically) "unlimited" time, the coast-level would be placed out of reach, either by elevation or submergence. The hypothesis of approximately unlimited time seems to me, therefore, to be untenable. And what *we require is not time but force*, in order to account for the planing away of vast masses of obdurate strata over extensive areas. Such additional force Prof. Ball has supplied us with. He has shown that at a comparatively early stage of geological history the tides may have had a denuding effect several hundred times more powerful than the present. With such a "stupendous tidal grinding-engine" we may indeed conceive the work we have to account for accomplished, and the hypothesis of Prof. Ball approaches certainty, when it is considered that the character of the floors of the sea adjoining our coast-lines gives but slight evidence that such planes of marine denudation as I have attempted to describe, are in course of formation at the present day. They are phenomena of the past, not of the present, when wave and tidal action has, happily for mankind, subsided into restricted limits as compared with that of Palæozoic and Mesozoic times.

EDWARD HULL

TELEGRAPHS IN CHINA

ON December 2 a telegram was received from Reuter's agent at Shanghai, announcing that the telegraph line between that town and Tientsin was finished. In a few weeks we may expect to hear of the completion of the line to Peking. The capital of the Chinese empire, the chief seat of bigotry and hostility to foreign innovation, will then be in direct communication with Europe and America. There is, we believe, no doubt in the minds of those acquainted with the origin of this undertaking, that political motives alone dictated it. Hitherto, during the winter, when the mouth of the Peiho was closed by ice, couriers taking from twenty to thirty days on the journey travelled down the Grand Canal to the Yangtsze conveying letters to Shanghai; or they were sent across Manchuria, in from fifteen to twenty days to Kiachta, where they reached the Great Northern Telegraph Company's Siberian lines. These slow and uncertain modes of communication with the outer world were severely felt by the Chinese Government during the winters of 1879 and 1880, when its relations were almost broken off with Russia, when the land and sea forces of the latter were hanging like a thundercloud on the frontiers of China, and a peaceable solution of the Kuldja question seemed impossible. It was then brought home to the Peking authorities that their coasts might be invaded, their principal cities captured, and the foe be almost at their gates weeks before they heard the news. The bitter experience of these years taught the Chinese a hard lesson, but one which they speedily took to heart. Long before the Marquis Tsêng brought the question to a

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